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PATENT
Attorney Docket No.: 27373/33716

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Whitley *et al.*

Serial No.: 09/869,674

Filed: June 29, 2001

Priority Date: December 30, 1998

For: Recombinant Herpes Simplex Virus Useful for Treating Neoplastic Disease

Group Art Unit: To be assigned

Examiner: To be assigned

I hereby certify that this paper and the papers referred to as attached are being deposited with the United States Postal Service, as first class mail, postage prepaid, in an envelope addressed to the Commissioner of Patents, Washington, D.C. on October 25, 2001

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INFORMATION DISCLOSURE STATEMENT
PURSUANT TO 37 C.F.R. §§ 1.56, 1.97, AND 1.98

Commissioner for Patents
Washington, D.C. 20231

Sir:

In compliance with 37 C.F.R. §1.97 and the continuing duty of disclosure under 37 C.F.R. §1.56, the applicants call to the attention of the examiner the enclosed publications, as listed on the attached Form PTO-1449, which may be considered material to the examination of the above-identified patent application.

Documents A4, C4, and C39 were cited in the enclosed international search report of international patent appl. no. PCT/US98/27902 (from which the present application claims priority).

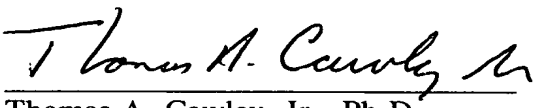
This information disclosure statement is not intended to be an admission that a search has been made, that other relevant art does not exist, or that any of the information disclosed herein constitutes prior art under 35 U.S.C. §102 or 35 U.S.C. §103.

This information disclosure statement is submitted before receipt of a first official

action on the merits and consequently should be considered by the Patent Office without payment of a fee [see 37 C.F.R. §1.97(b)]. However, should the Patent Office determine that a fee is due for consideration of this information disclosure statement and accompanying publications, the Patent Office is hereby authorized to charge said fee to Deposit Account No. 13-2855.

Respectfully submitted,

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October 25, 2001

OIPE JC161 DEC 11 2001 PATENT & TRADEMARK OFFICE

Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Atty. Docket No. 27373/33716	Serial No. 09/869,674
INFORMATION DISCLOSURE STATEMENT *(Use several sheets if necessary)*		Applicant Whitley et al	
		Filing Date 6/29/01	Group To be assigned

U.S. PATENT DOCUMENTS

*Examiner Initials		Document Number	Issue Date	Name	Class	Subclass	Filing Date If Appropriate
	A1	5,231,012	7/27/93	Mosmann *et al.*	435	69.52	
	A2	5,328,688	7/12/94	Roizman, B.	424	205.1	
	A3	5,328,989	7/12/94	Vellekamp *et al.*	530	351	
	A4	5,585,096	12/17/96	Martuza *et al.*	424	93.2	
	A5	5,641,651	6/24/97	Roizman, B.	435	69.1	

FOREIGN PATENT DOCUMENTS

*Examiner Initials		Document Number	Publication Date	Country	Class	Subclass	Translation	
							Yes	No
	B1	0 302 429 B1	7/28/93	EPO				
	B2	WO 00/40734	7/13/00	PCT				

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)

	C1	Allione, *et al.*, "Immunizing and Curative Potential of Replicating and Nonreplicating Murine Mammary Adenocarcinoma Cells Engineered with Interleukin (IL)-2, IL-4, IL-6, IL-7, IL-10, Tumor Necrosis Factor α, Granulocyte-Macrophage Colony-stimulating Factor, and γ-Interferon Gene or Admixed with Conventional Adjuvants," *Cancer Research* 54:6022-6026 (1994).

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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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		OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)
	C2	Andreansky, *et al.*, "The Application of Genetically Engineered Herpes Simplex Viruses to the Treatment of Experimental Brain Tumors," *Proc. Natl. Acad. Sci. USA* **93**:11313-11318 (1996).
	C3	Andreansky, *et al.*, "Evaluation of Genetically Engineered Herpes Simplex Viruses as Oncolytic Agents for Human Malignant Brain Tumors," *Cancer Research* **57**:1502-1509 (1997).
	C4	Andreansky, *et al.*, "Treatment of Intracranial Gliomas in Immunocompetent Mice Using Herpoes Simplex Viruses that Express Murine Interleukins," *Gene Therapy* **5**:121-130 (1998).
	C5	Aoki, *et al.*, "Expression of Murine Interleukin-7 in a Murine Glioma Cell Line Results in Reduced Tumorigenicity *in vivo*," *Proc. Natl. Acad. Sci. USA* **89**:3850-3854 (1992).
	C6	Asher, *et al.*, "Murine Tumor Cells Transduced with the Gene for Tumor Necrosis Factor-α, Evidence for Paracrine Immune Effects of Tumor Necrosis Factor against Tumors," *J. Immunology* **146**:3227-3234 (1991).
	C7	Ausman, *et al.*, "Studies on the Chemotherapy of Experimental Brain Tumors: Development of an Experimental Model," *Cancer Research* **30**:2394-2400 (1970).
	C8	Beutler, *et al.*, "Control of Cachectin (Tumor Necrosis Factor) Syntheses: Mechanisms of Endotoxin Resistance," *Science* **232**:977-980 (1986).
	C9	Blankenstein, *et al.*, "Tumor Suppression after Tumor Cell-targeted Tumor Necrosis Factor α Gene Transfer," *J. Exp. Med.* **173**:1047-1052 (1991).
	C10	Caruso, *et al.*, "Adenovirus-mediated Interleukin-12 Gene Therapy for Metastatic Colon Carcinoma." *Proc. Natl. Acad. USA* **93**:11302-11306 (1996).
	C11	Chambers, *et al.*, "Comparison of Genetically Engineered Herpes Simplex Viruses for the Treatment of Brain Tumors in a *Scid* Mouse Model of Human Malignant Glioma," *Proc. Natl. Acad. Sci. USA* **92**:1411-1415 (1995).
	C12	Cheng, *et al.*, "*In vivo* Promoter Activity and Transgene Expression in Mammalian Somatic Tissues Evaluated by Using Particle Bombardment," *Proc. Natl. Acad. Sci. USA* **90**:4455-4459 (1993).

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)		
	C13	Cho, *et al.*, "IL-6 Undergoes Transition from *in vitro* Autocrine Growth Factor to *in vivo* Growth Inhibitor of B Lymphoma Cells," *J. Biomed. Sci.* **4**:201-207 (1997).
	C14	Chou, *et al.*, "Mapping of Herpes Simplex Virus-1 Neurovirulence to $\gamma_1$34.5, a Gene Nonessential for Growth in Culture," *Science* **250**:1262-1266 (1990).
	C15	Chou, *et al.*, "Differential Response of Human Cells to Deletions and Stop Codons in the $\gamma_1$34.5 Gene of Herpes Simplex Virus," *J. Virology* **68**:8304-8311 (1994).
	C16	Couldwell, *et al.*, "Malignant Glioma Modulation of Immune Function: Relative Contribution of Different Soluble Factors," *J. Neuroimmunol.* **33**:89-96 (1991).
	C17	Devos, *et al.*, "Molecular Cloning of Human Immune Interferon cDNA and Its Expression in Eukaryotic Cells," *Nucl. Acids Res.* **10**:2487-2501 (1982).
	C18	Douvdevani, *et al.*, "Reduced Tumorigenicity of Fibrosarcomas which Constitutively Generate IL-1α Either Spontaneously or Following IL-1α Gene Transfer," *Int. J. Cancer* **51**:822-830 (1992).
	C19	Dranoff, *et al.*, "Activities if Granulocyte-Macrophage Colony-Stimulating Factor Revealed by Gene Transfer and Gene Knockout Studies," *Stem Cells* **12**:173-184 (1994).
	C20	Fakhrai, *et al.*, "Construction and Characterization of Retroviral Vectors for Interleukin-2 Gene Therapy," *J. Immunother.* **20**:437-448 (1997).
	C21	Fearon, *et al.*, "Interleukin-2 Production by Tumor Cells Bypasses T Helper Function in the Generation of an Antitumor Response," *Cell* **60**:397-403 (1990).
	C22	Finke, *et al.*, "Increase of Proliferation Rate and Enhancement of Antitumor Cytoxicity of Expanded Human $CD3^+CD56^+$ Immunologic Effector Cells by Receptor-mediated Transfection with the Interleukin-7 Gene," *Gene Therapy* **5**:31-39 (1998).
	C23	Golumbeck, *et al.*, "Treatment of Established Renal Cancer by Tumor Cells Engineered to Secrete Interleukin-4," *Science* **254**:713-716 (1991).

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	C24	Goodwin, *et al.*, "Human Interleukin7: Molecular Cloning and Growth Factor Activity on Human and Murine B-Lineage Cells," *Proc. Natl. Acad. Sci. USA* **86**:302-306 (1989).
	C25	Gray, *et al.*, "Expression of Human Immune Interferon cDNA in *E. coli* and Monkey Cells," *Nature*, **295**:503-508 (1982).
	C26	Hock, *et al.*, "Interleukin-7 Induces $CD4^+$ T Cell Dependent Tumor Rejection," *J. Exp. Med.* **174**:1291-1298 (1991).
	C27	Jenkins, *et al.*, "Herpes Simplex Virus 1 Recombinants with Noninverting Genomes Frozen in Different Isomeric Arrangements are Capable of Independent Replication," *J. Viol.* **59**:494-499 (1986).
	C28	Krüger-Krasagakes, *et al.*, "Production of Cytokines by Human Melanoma Cells and Melanocyted," *Cancer Research* **139**:155-168 (1995).
	C29	Lagunoff, *et al.*, "The Regulation of Synthesis and Properties of the Protein Product of Open Reading Frame P of the Herpes Simplex Virus 1 Genome," *J. Virol.* **69**:3615-3623 (1995).
	C30	Lee, *et al.*, "Isolation and Characterization of a Mouse Interleukin cDNA Clone that Expresses B-Cell Stimulatory Factor 1 Activities and T-cell and Mast-cell-Stimulating Activities," *Proc. Natl. Acad. Sci. USA* **83**:2061-2065 (1986).
	C31	Lukacs, *et al.*, Transgene-induced Production of IL-4 Alters the Development and COllagen Expression of T Helper Cell 1-type Pulmonary Granulomas," *J. Immunol.* **158**:4478-4484 (1997).
	C32	Maeda, *et al.*, "Cloning of Interleukin 2 mRNAs From Human Tonsils," *Biochem. Biophys. Res. Com.* **115**:1040-1047 (1983).
	C33	Maliszewski, *et al.*, "Bovine GM-CSF: Molecular Cloning and Biological Activity of the Recombinant Protein," *Mol. Immunol.* **25**:843-850 (1988).
	C34	March, *et al.*, "Cloning, Sequence and Expression of Two Distinct Human Interleukin-1 Complementary DNAs," *Nature* **315**:641-647 (1985).

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)		
	C35	Markert, *et al.*, "Reduction and Elimination of Encephalitis in an Experimental Glioma Therapy Model with Attenuated Herpes Simplex Muitants that Retain Susceptibility to Acyclovir," *Neurosurg.* **32**:597-603 (1993).
	C36	Martuza, *et al.*, "Experimental Therapy of Human Glioma by Means of a Genetically Engineered Virus Mutant," *Science* **252**:854-856 (1991).
	C37	Moore, *et al.*, "Homology of Cytokine Synthesis Inhibitory Factor (IL-10) to the Epstein-Barr Virus Gene BCRFI," *Science* **248**:1230-1234 (1990).
	C38	Moore, *et al.*, "Interleukin-10," *Annu. Rev. Immunol.* **11**:165-190 (1993).
	C39	Moriuchi, *et al.*, "Enhanced Tumor Cell Killing in the Presence of Ganciclovir by Herpes Simplex Virus Type 1 Vector-directed Coexpression of Human Tumor Necrosis Factor-α and Herpes Simplex Virus Thymidine Kinase," *Cancer Research* **58**:5731-5737 (1998).
	C40	Mulé, *et al.*, "Cellular Mechanisms of the Antitumor Activity of Recombinant IL-6 in Mice," *J. Immunol.* **148**:2622-2629 (1992).
	C41	Porgador, *et al.*, "Immunotherapy Via Gene Therapy: Comparison of the Effects of Tumor Cells Transduced with the Interleukin-2, Interleukin-6, or Interferon-γ Genes," *J. Immunother.* **14:**191-201 (1993).
	C42	Porgador, *et al.*, "Interleukin 6 Gene Transfection into Lewis Lung Carcinoma Tumor Cells Suppresses the Malignant Phenotype and Confers Immunotherapeutic Competence against Parental Metastatic Cells," *Cancer Research* **52**:3679-3686 (1995).
	C43	Post, *et al.*, "A Generalized Technique for Deletion of Specific Genes in Large Genomes: α Gene 22 of Herpes Simplex Virus 1 is Not Essential for Growth," *Cell* **25**:227-232 (1981).
	C44	Ram, *et al.*, "*In vivo* Transfer of the Human Interleukin-2 Gene: Negative Tumoricidal Results in Experimental Brain Tumors," *J. Neurosurg.* **80**:535-540 (1994).
	C45	Ram, *et al.*, "Therapy of Malignant Brain Tumors by Intratumoral Implantation of Retroviral Vector-producing Cells," *Nature Medicine* **3**:1354-1361 (1997).

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	C46	Renauld, *et al.*, "Human P40/IL-9: Expression in Activated CD4$^+$T Cells, Genomic Organization, and Comparison with the Mouse Gene," *J. Immunol.* **144**:4235-4241 (1990).
	C47	Restifo, *et al.*, "Identification of Human Cancers Deficient in Antigen Processing," *J. Exp. Med.* **177**:265-272 (1993).
	C48	Richter, *et al.*, "Interleukin 10 Transfected into Chinese Hamster Ovary Cells Prevents Tumor Growth and Macrophage Infiltration," *Cancer Research* **53**:4131-4137 (1993).
	C49	Rinderknecht, *et al.*, "Natural Human Interferon-γ. Complete Amino Acid Sequence Determination of Sites of Glycosylation," *Biol. Chem.* **259**:6790-6797 (1984).
	C50	Roizman, *et al.*, "Genetic Engineering of Novel Genomes of Large DNA Viruses," *Science* **229**:1208-1218 (1985).
	C51	Roszman, *et al.*, "Modulation of T-Cell Function by Gliomas," *Immunology Today* **12**:370-374 (1991).
	C52	Schumacher, *et al.*, "Use of Clinically Relevant Human-*scid*-mouse Models in Metastasis Research," *TIBTECH* **15**:239-241(1997).
	C53	Shih, *et al.*, "Expression of Hepatitis B Virus *S* Gene by Herpes Simplex Virus Type 1 Vectors Carrying α- and β-Regulated Gene Chimeras," *Proc. Natl. Acad. Sci. USA* **81**:5867-5870 (1984).
	C54	Souza, *et al.*, "Recombinant Human Granulocyte Colony-Stimulating Factor: Effects on Normal and Leukemic Myeloid Cells," *Science* **232**:60-65 (1986).
	C55	Tada, *et al.*, "Cellular and Cytokine Responses of the Human Central Nervous System to Intracranial Administration of Tumor Necrosis Factor α for the Treatment of Malignant Gliomas," *Cancer Immunol. Immunother.* **36**:251-259 (1993).
	C56	Taniguchi, *et al.*, "Structure and Expression of a Cloned cDNA for Human Interleukin-2," *Nature* **302**:305-310 (1983).

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	C57	Takamiya, *et al.*, "Gene Therapy of Malignant Brain Tumors: A Rat GLioma Line Bearing the Herpes Simplex Virus Type 1-Thymidine Kinase Gene and Wild Type Retrovirus Kills other Tumor Cells," *J. Neurosci. Res.* **33**:493-503 (1992).
	C58	Tepper, *et al.*, "Review: Experimental and Clinical Studies of Cytokine Gene-Modified Tumor Cells," *Human Gene Therapy* **5**:153-164 (1994).
	C59	Tjuvajev, *et al.*, "RG-2 Glioma Growth Attenuation and Severe Brain Edems Caused by Local Production of Interleukin-2 and Interferon-γ," *Cancer Research* **55**:1902-1910 (1995).
	C60	VanCott, *et al.*, "Regulation of Mucosal and Systemic Antibody Responses by T Helper Cell Subsets, Macrophages, and Derived Cytokines Following Oral Immunization with Live Recombinant *Salmonella*," *J. Immunology* **156**:1504-1514 (1996).
	C61	Vieira, *et al.*, "Isolation and Expression of Human Cytokine Synthesis Inhibitory Factor cDNA Clones: Homology to Epstein-Barr Virus Open Reading Frame BCRFI," *Proc. Natl. Acad. Sci. USA* **88**:1172-1176 (1991).
	C62	Vigon, *et al.*, "Molecular Cloning and Characterization of *MPL*, the Human Homolog of the V-*mpl* Oncogene: Identification of a Member of the Hematopoietic Growth Factor Receptor Superfamily," *Proc. Natl. Acad. Sci. USA* **89**:5640-5644 (1992).
	C63	Wei, *et al.*, "Enhancement of Interleukin-4-Mediated Tumor Regression in Athymic Mice by *In Situ* Retroviral Gene Transfer," *Human Gene Therapy* **6**:437-443 (1995).
	C64	Wiranowska, *et al.*, "Evaluation of Blood-brain Barrier Permeability and the Effect of Interferon in Mouse Glioma Model," *J. Neuro-Oncology* **14**:225-236 (1992).
	C65	Yu, *et al.*, " Treatment of Glioma by Engineered Interleukin 4-Secreting Cells," *Cancer Research* **53**:3125-3128 (1993).

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